Charter and Operating Principles
Solution Architect Working Group (SAWG)

Draft – Version 1.0

Federal Enterprise Architecture
Program Management Office (FEA-PMO)

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1.0 BACKGROUND

1.1 E-Government

The level of IT spending proposed over the next several years provides enormous opportunities for making the transformation of government into a citizen-centered E-Government. The primary goals encompassing the administration's E-Government agenda are to:

- Make it easy for citizens to obtain service and interact with the federal government.
- Improve government efficiency and effectiveness.
- Improve government's responsiveness to citizens.

Office of Management and Budget (OMB) Director Mitchell E. Daniels initiated an interagency E-Government Task Force to identify the action plan for implementing the E-Government initiative. Under the leadership of Mark Forman, Associate Director for Information Technology (IT) and E-Government at OMB, employees from across the federal government made up the Task Force. The E-Government Task Force found that the federal government could significantly improve customer service over the next 18 to 24 months by focusing on high-payoff, government-wide initiatives that integrate agency operations and IT investments. The President's management council and OMB have approved 24 initiatives for further development.

These initiatives, now labeled as the "**24 Presidential Priority E-Gov Initiatives**", are expected to generate several billion dollars in cost savings by reducing operating inefficiencies, redundant spending and excessive paperwork. The initiatives will provide service to citizens in minutes or hours, compared to today's standard of days or weeks. Moreover, by leveraging IT spending across federal agencies, the initiatives will make available over $1 billion in savings from aligning redundant investments.

1.2 Federal Enterprise Architecture Program Management Office (FEA-PMO)

The Federal Enterprise Architecture Program Management Office (FEA-PMO) was established on February 6, 2002 by OMB. The lack of a Federal Enterprise Architecture (FEA) was cited by the 2001 E-Government Task Force as a key barrier to the success of the 24 Presidential Priority E-Gov initiatives approved by the President's Management Council in October 2001. (Summaries of the initiatives are provided in *Appendix B* of this document.)

On April 15th, 2002, the FEA-PMO released a White Paper and Solution Roadmap outlining a component-based architecture embracing a recommended set of tools, industry-standards, and proven technologies. This architecture is envisioned to support

the implementation of the 24 Presidential Priority E-Gov initiatives and provide a foundation for interoperability, sharing of functions and business processes, and reduction of duplicative systems and the Federal Government.

2.0 THE ISSUE

Federal activities and business functions are being duplicated across the different agencies, resulting in unnecessary burdens and costs to citizens, state and local governments, businesses and federal employees. While the Federal Government is the biggest spender and consumer of information technology resources across the United States, it has not experienced improvements in quality, productivity or customer service as per industry and commercial markets. Agencies have bought systems that address internal needs, without a significant focus on inter-agency operability or return on investment (ROI). Consequently, these systems operate based on existing agency processes, with less regard to the efficiency and effectiveness of the technical solution that help perform these processes.

There is a strong need and business case for standardization of technologies and requirements used to design, build, and implement solutions for the 24 Presidential Priority E-Gov initiatives. Without standardization and the recommendation of technologies, agencies risk building and deploying solutions that use proprietary technologies, are not aligned to an FEA and isolate themselves from other initiatives and cross-agency business functions. To mitigate these risks, FEA-PMO has created a Component-Based Architecture that defines a set of recommendations that should be considered when selecting the tools, technologies, and industry-standards that will be used to build the 24 Presidential Priority E-Gov initiatives and subsequent business solutions.

To assist with coordination and implementation of the Component-Based Architecture, a multi-disciplinary and cross functional working group of initiative representatives is necessary.

3.0 MISSION AND GOALS

The Solution Architect Working Group (SAWG) is being created to help agencies and the 24 Presidential Priority E-Gov initiatives reach success in areas of system architecture, technology selection, and the adoption of industry-driven standards (i.e., XML, Web Services, J2EE) that can be leveraged on a governmentwide scale.

The **primary mission** of the Solution Architect Working Group (SAWG) is to provide agencies and the 24 Presidential Priority E-Gov initiatives with architectural guidance, technology recommendations, development approaches, and technology transition strategies that support the adoption and implementation of initiatives using a Component-Based Architecture and business-driven approach.

Specifically, the SAWG will:

- Provide E-Gov initiative teams with solution architects who will assist in defining initiative blueprints and validate system architectures to support the planning and implementation of the 24 Presidential Priority E-Gov initiatives.
- Establish linkages between relevant governmentwide entities (i.e., CIO Council, XML Working Group) to ensure that standards, best practices, and lessons learned are leveraged across the entire government.
- Select, recommend, and assist in the deployment of technologies that are proven, stable, interoperable, portable, secure, and scalable.
- Help E-Gov initiatives migrate and transition from legacy and "inward-driven" architectures, to architectures that embrace component-driven methodologies and technology reuse.
- Identify and quickly capitalize on opportunities to leverage, share, and reuse technologies to support common business requirements, activities, and operations across the Federal Government.
- Champion the creation and propagation of Intellectual Capital (IC) that can assist in E-Government transformation.

The SAWG will collaborate with agencies to collectively define a set of standards and solution architecture recommendations that can meet the immediate objectives of their initiatives (i.e., 24 Presidential Priority E-Gov), while providing a foundation to support an integrated E-Government. These activities will give SAWG a baseline in which standards and recommendations may be built and/or expanded based on lessons learned and best practices.

The overall impact of these goals is projected to be a reduction in the total cost of ownership (on a Governmentwide scale), shorter software development and testing cycle, consistency, and the sheer ability to leverage cross-agency functions, data, and technology more effectively.

4.0 KEY OBJECTIVES AND TIMELINES

Objective 1: Generation and Distribution of Intellectual Capital (IC)

One of the key objectives of the SAWG will be the generation and distribution of IC to support the implementation of the E-Gov initiatives. IC will be generated on an "on-going" basis and be centralized in a Collaboration / Knowledge Management tool. Please refer to *Section 12.0 – Knowledge Management* for descriptions of supporting tools to enable this objective. IC will include (but not be limited to):

- White Papers
- Lessons Learned
- Best Practices
- Recommendations
- Questionnaires
- Strategies

Objective 2: Architecture Assessments and Linkage Identification

In order to effectively help agencies with architecture planning and solution recommendations, the SAWG will perform monthly assessments of each of the 24 Presidential Priority E-Gov initiatives to gain a better understanding of:

- Existing architecture and technologies
- Targeted solution architecture and technologies
- Implementation plan (progress)
- Interoperability (if required)
- Problems and Risks

These assessments will be performed on a monthly basis to ensure that agencies are leveraging governmentwide best practices, lessons learned, and provide a basis for progress and risk. Assessments will not be focused on project management tasks (i.e., status reports, earned value, budgets, etc.)

Additionally, the SAWG will identify the necessary linkages with Government, State and Local entities to leverage existing and forecasted initiatives. Please refer to *Section 9.0 Linkages* for an initial list of linkages.

Objective 3: Component-Based Architecture Specifications

The SAWG will create a detailed specification outlining the tools, technologies, and industry-standards that should be used when implementing an E-Gov initiative. While a White Paper and Solution Roadmap have already been created by FEA-PMO, this

specification will act as formal guidance outlining technology versions, examples, points of contact, best practices, etc. This document will serve as a "*living framework*" that will be modified on an on-going basis, with consideration to changing and emerging technologies that support the recommendations identified. Additionally, this document will highlight procedures and practices to effectively align the selection of technology to (and across) business requirements and processes. These include (but are not limited to):

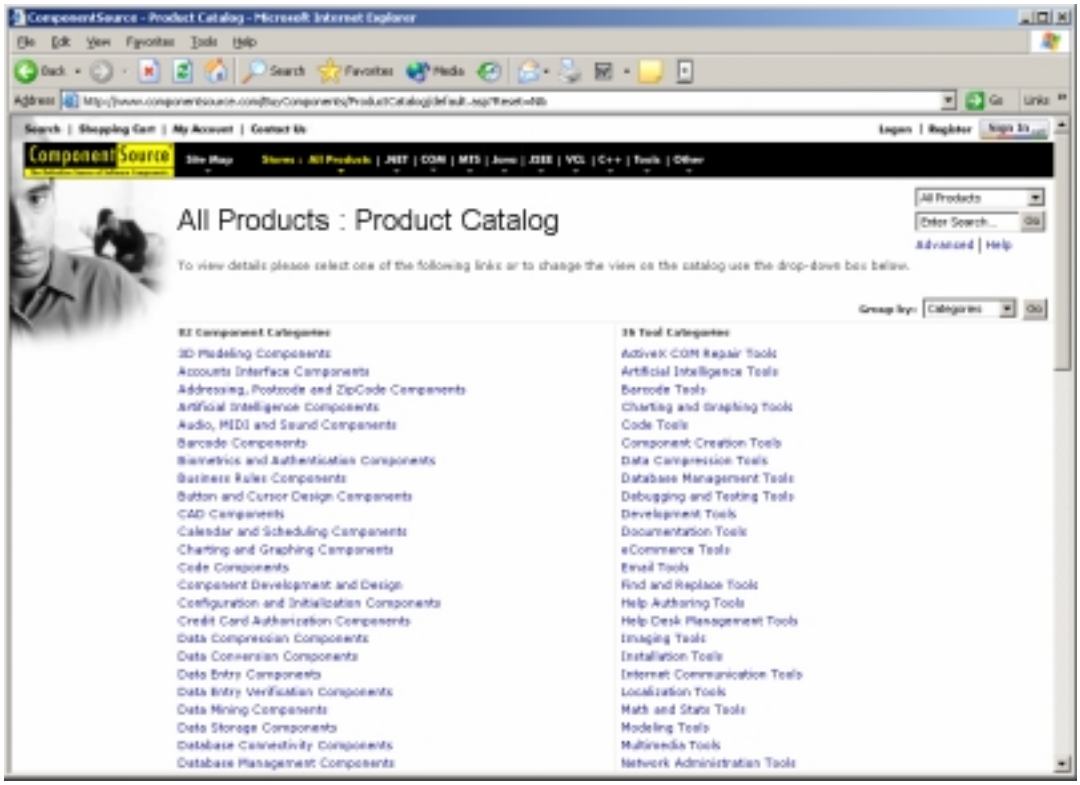
- Use Case
- Activity Diagrams
- Sequence Diagrams
- Class Diagrams
- Entity-Relationship Diagrams (ERD)
- Unified Modeling Language (UML)
- Alignment to Federal Reference Models
    - Business Lines
    - Capability and Functions
    - Application
    - Technology

Objective 4: Component Directory

The SAWG will establish a Component directory that will be accessible over a secure extranet to initiative owners and the managing partners of the 24 Presidential Priority E-Gov initiatives. This directory will provide an area in which users can find, evaluate, share, download, and rate software components, as well as a directory of business functions that the component supports. The Component directory will provide the "latest" research and analysis surrounding the selection and recommendation of third-party / industry components that are supported by the Component-Based Architecture specifications.

The establishment of a Component Directory is wide accepted as a means in which organizations can leverage the knowledge and intellectual property across public, state and local industries. For instance, organizations such as the National Association of State CIO's (NASCIO) have partnered with ComponentSource to create the National Software Component Exchange (NSCE) for state and local governments. See *Figure 1.* Other exchanges and component-service organizations offer similar services that should be leveraged when making the decision to partner and / or build a similar solution.

FIGURE 1 – COMPONENT DIRECTORY EXAMPLE



http://www.componentsource.com

Objective 5: Training Syllabus

The SAWG will provide recommendations that outline a training syllabus to support Component-Based development. Courses will include training on architecture, development, program management, and implementation from credible educational and technical providers.

Objective 6: Monitoring, Support, Guidance

As an ongoing objective, the SAWG will provide daily support, guidance, and subject matter expertise (SME) to assist agencies in the implementation of their initiatives. Subject to the availability of SAWG Solution Architects, monitoring, support, and guidance will include (but is not limited to):

- Onsite visits

- Architecture review and comment
- Verification and Validation (V&V)
- Joint Application Development Sessions (JAD)
- Rapid Application Development Sessions (RAD)

The SAWG will create procedures and guidelines on how Solution Architects will be engaged (i.e., Engagement Process)

Objective 7: Communication and Outreach

The SAWG will establish an external website (e.g., http://www.sawg.gov) to support intra and inter-governmental communications of activities, successes, and progress to the government and external community. In addition, the SAWG will liaison with relevant governmentwide entities (i.e., CIO Council, XML Working Group, Architecture Committees, etc) to ensure that guidance and recommendations are integrated into Federal guidance and compliance if applicable.

Objective 8: Risk Mitigation Strategy

The SAWG will assist the Portfolio Managers in the creation of a Risk Mitigation Strategy that outlines how SAWG will mitigate short and long-term organizational and technology risks. Please refer to *Section 8.0 Risks* for a brief list of projected risks.

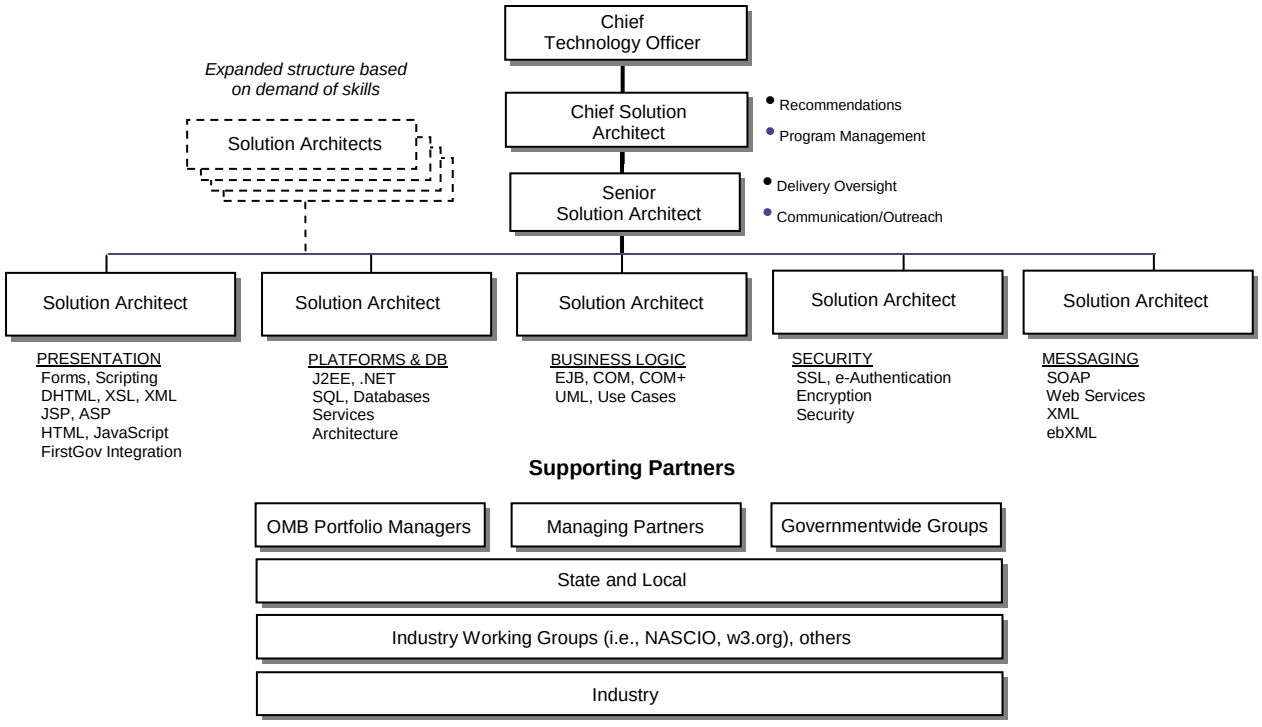
EXHIBIT 1 – KEY OBJECTIVES AND TIMELINE SCHEDULE

#	Description	Milestone(s)	Completion Date
1.	Generation and Distribution of Intellectual Capital	M1 - Intellectual Capital	On-Going
2.	Architecture Assessments	M2 – Assessment M3 – Linkage Identification	Monthly 06/10/02 then ongoing
3.	Component-Based Architecture Specification	M4 - CBA Specification	06/03/02
4.	Component Directory	M5 - Component Directory	08/1/02
5.	Training Syllabus	M6 – Training Syllabus	07/15/02
6.	Monitoring, Support, Guidance	M7 – Monitoring/Support M8 – Engagement Process	Daily 06/03/02
7.	Communication and Outreach	M9 – Establish Website M10 – Comm/Outreach	05/20/02 Daily
8.	Risk Mitigation Strategy	M11 - Risk Mitigation Strategy	05/20/02

5.0 ROLES

FEA-PMO is the managing organization supporting the activities and responsibilities of the SAWG. FEA-PMO will ensure that the SAWG is properly staffed with qualified Solution Architects from Federal agencies, industry, contractor support, or any combination. However, the SAWG Chief Architect and Senior Solution Architect will always be staffed by a Federal resource. Figure 2 illustrates the organizational structure of the SAWG.

FIGURE 2 – SAWG ORGANIZATIONAL STRUCTURE



Note *– The Chief, Senior, and Solution Architects will be matrixed from Federal Agencies on a scheduled basis (i.e., 60-90 days).*

EXHIBIT 2 – SAWG TEAM STRUCTURE

Position	Role	Organization	Name
Steering Committee / Managing Partners			
Associate Director of IT		OMB	Mark Forman
Chief Technology Officer	CTO	OMB	Norman Lorentz
FEA-PMO	Program Mgr	OMB	Bob Haycock
Architecture & Infr. Cmte	Co-Chair	NASA	Lee Holcomb
Architecture & Infr. Cmte	Co-Chair	USAF	John Gilligan
SAWG Core Team			
Chief Architect	Program Mgr	OMB	Bob Haycock
Senior Solution Architect	Oversight	GSA	Lew Sanford
Solution Architect	Security	NASA	Tice DeYoung
Solution Architect	Messaging	GSA	Marion Royal
Solution Architect	Platforms	FirstGov	Roopangi Kadakia
Solution Architect	Requirements	Int. Trade	Martin Smith
Contractor Support	Tech Advisor	BAH	Jim Benson
OMB Portfolio Managers			
E-Gov Portfolio Mgr (G2G)		OMB	Tony Frater
E-Gov Portfolio Mgr (G2B)		OMB	Tad Anderson
E-Gov Portfolio Mgr (G2C)		OMB	Jonathan Womer
E-Gov Portfolio Mgr (IEE)		OMB	Steve Galvan
E-Gov Portfolio Mgr (eAuth)		OMB	Jeanette Thornton
Governmentwide			
CIO Council	Vice Chairman	Treasury	Jim Flyzik
FAWG	Co-Chair	DOE	Mike Tiemann
FAWG	Co-Chair	GSA	Lew Sanford
XML Working Group	Co-Chair	GSA	Marion Royal
XML Working Group	Co-Chair	FWS	Owen Ambur

5.1 Chief Architect

The primary responsibilities of the Chief Architect will be to:

- Provide leadership, direction, and overall direction over the Solution Architects.
- Provide oversight to multiple software development projects and be the primary decision maker in selecting the appropriate technical architecture to be used by the projects.
- Work with all related parties (management, end users, requirements analysts, Solution Architect) in order to determine the objectives of each system, as well as the constraints (chronological, technical, financial) to help determine the most suitable technical architecture and define the solution at a high level so that it may be used by the Solution Architect(s) in developing the detailed technical architecture.

- Provide technical oversight of the project to ensure that the technical architecture is designed, developed, tested, and deployed properly and according to plan.
- Work closely with the Solutions Architect(s) assigned to each project in order to ensure that all technical architecture requirements are adequately addressed.
- Engage with the selected integrator (in-house or external teams) to deliver component-based technical architectural solutions to the end-user customers.
- Provide project technical oversight, work with Solutions Architects to update the minimum technical standards to take into account constantly changing technologies, and network with vendor representatives and public and private sector Chief Architects in order to share information.
- Advise top Information Management (IM) officials on the benefits of a component based technical architecture, and to maximize the benefit of an organization-wide technical architecture standardization policy.
- Participate in a variety of forums with the Solutions Architects in order to share best practices, lessons learned, constantly update the technical system architecture requirements based on changing technologies, and share knowledge related to recent and current and up-coming vendor products and solutions.
- Develop relationships with vendors providing products and/or services in the related technologies in order to gain a forward-looking vision of the direction of the technologies.

5.2 Solution Architect

The primary responsibilities of the Solution Architect will be to:

- Direct the specific technical architectural design for the 24 Presidential Priority E-Gov initiatives in support of the overall technical architectural direction specified by the Chief Architect.
- Work closely with the E-Gov initiatives software development teams in order to create the initial technical architectures, as well as update the system technical architectures in response to system enhancements and modifications. The Solutions Architect will focus on maximizing the use of common architectures, components, and strategies across efforts.
- Work with the Chief Architect and other Solutions Architects to set standards and ensure the consistent application of architectures, business logic, and documentation for external parties, security, interoperability, reusability, scalability, extensibility, and dependability.
- Engage with the selected integrator (in-house or external teams) to deliver component-based technical architectural solutions to end-user customers.
- Individually lead the technical architecture design for a particular effort, or team with additional Solution Architects, depending on the needs of the effort.

- Advise and guide the project managers for each specific effort, ensuring that the Chief Architect's decision and common vision is communicated and properly executed for each effort.
- Participate in a variety of forums with other Solutions Architects and the Chief Architect in order to share best practices, lessons learned, continually update the technical system architecture requirements based on changing technologies, and share knowledge related to recent and current and up-coming vendor products and solutions.
- Keep abreast of all current and upcoming technologies related to component based technical architectures, specifically those surrounding Open Technologies and Open Standards, J2EE, .NET, and web services.
- Develop relationships with vendors providing products and/or services in the related technologies in order to gain a forward-looking vision of the direction of the technologies.
- Advise officials on the benefits of a component based technical architecture, and to maximize the benefit of an organization-wide technical architecture standardization policy.

5.3 OMB Portfolio Manager(s)

- Portfolio Managers are responsible for elevating / communicating technical risks, issues, concerns, and problems that agencies are experiencing when planning and/or implementing E-Gov initiatives within their portfolio to the SAWG.
- Advise officials and agencies on SAWG capabilities and encourage agency to SAWG communications.
- Portfolio Managers are responsible for providing overall guidance, assistance, coordination, review and approval for higher level consideration of each project in their portfolio.
- Responsible for ensuring their portfolio of projects achieve, on average, at least 90% of approved cost, schedule, and performance goals.

6.0 RESOURCES AND CONSTRAINTS

The SAWG will need access to various resources to achieve the goals and objective outlined within this document.

EXHIBIT 2 – RESOURCES AND CONSTRAINTS

Resource	Constraint
Collaboration and KM Platform	Has not been set-up yet and will constrain SAWG's ability to share information
Workspace and Computers	The SAWG assumes it will be able to leverage OMB office space, internet connectivity and white boarding tools. Computer and laptops will be expected to be provided by SAWG members
Personnel / Staffing	Solution Architects are still being selected / positioned. Administrative staff will be needed to support the SAWG
Funding	Long term costs are unknown at present
Requirements	Requirements are still being defined and will follow an "iterative" approach based on agency progress

7.0 ASSUMPTIONS

There are certain assumptions that need to be considered to meet the goals of the project. These are identified as both organizational and technical.

Organizational:

- Administrative roles and the duties will be carried out by administrative staff.
- Solutions Architects and Chief Architect will meet all required aspects of their position descriptions.

Technical:

- Whenever possible, initiatives will integrate with a common security service platform (i.e., e-Authentication)
- Whenever possible, initiatives will integrate with FirstGov (http://www.firstgov.gov)
- Preference for open and standards-based technologies and platform is preferred

- Interoperability based on Extensible Mark-up Language (XML / ebXML) that will leverage a common language vocabulary. SAWG assumes communication will occur with the CIO Council's XML working group to define best practices supporting agency guidance (i.e., supporting tools, products, etc)
- Preference for commercial available solutions that align to recommendations as provided by the CBA and FEA Working Group Architecture Guidance (Common Reference Model)
- Agencies will help guide and evolve recommendations (i.e., technical, standards, tools) based on lessons learned

8.0 RISKS

There are a number of organizational and technical risks associated with SAWG fulfilling its mission and objectives. These include:

Organizational:

- Resistance to change – budget processes and agency cultures perpetuate obsolete bureaucratic divisions. Budgeting processes have not provided a mechanism for investing in cross-agency IT. Moreover, agency cultures and fear of reorganization create resistance to sharing work and sharing systems across several agencies.
- Many technical architecture problems have more than one viable solution, and many organizations have biases regarding the proper method to proceed. As a result, proposed designs often result in solutions that are opposed by other organizations requiring sensitive, sensible, and extensive arbitration and negotiations with upper management of these organizations.
- The Media coverage and attention may cause the Chief and Solutions Architects to spend more time justifying their decisions and leadership vs. helping agencies.

Technical:

- Evolving technology – The evolving nature and standards of XML make it a moving target for some areas of the architecture. However, this has stabilized over the past few years and is rapidly building momentum across the marketplace.
- Bias for technology selection (i.e., J2EE vs. Microsoft) may create bottlenecks in decision processes.
- Agencies may not have the trained resources to support implementation of SAWG recommendations.

9.0 LINKAGES

There are certain E-Gov initiatives and SAWG objectives that must first be achieved prior to the launch of subsequent initiatives and objectives. These include:

9.1 e-Authentication

This initiative is crosscutting across all of the 24 Presidential Priority E-Gov initiatives. It is important that this initiative be used not only by the E-Gov initiatives, but also the foundation for authentication solutions across government lines of business. For instance, USA services and EZ Tax Filing will need a secure framework to operate within, part of which will require e-Authentication.

9.2 FirstGov

Several of the 24 Presidential Priority E-Gov initiatives will need to be integrated and accesses through the FirstGov portal.

9.3 Federal Enterprise Architecture

In order for initiatives, components, and business services to be leveraged on a governmentwide basis, initiatives should be linked to a common Federal Enterprise Architecture. This will allow better analysis of the business processes among the agencies, help point out specific cross-agency opportunities, redundancies, and inefficiencies as well as baseline and target IT environments to facilitate a transition plan.

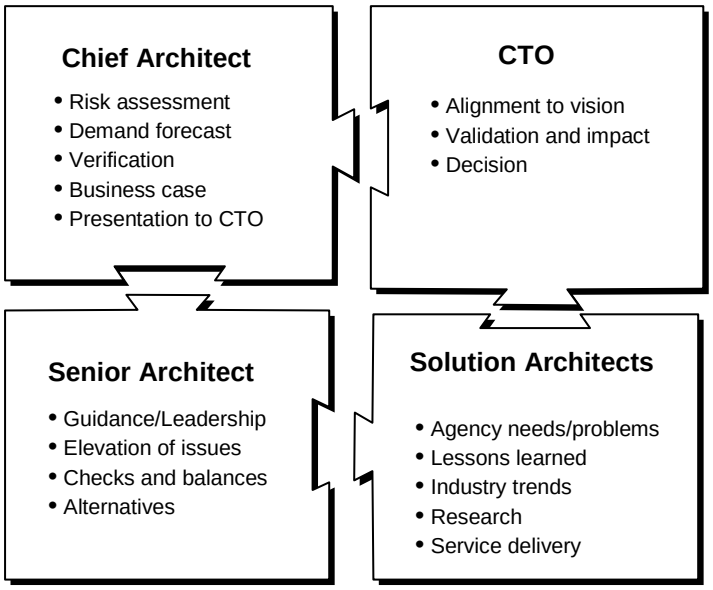
Note: *As lesson and best practices are defined, additional linkages may be discovered that are not outlined within this Charter (i.e., Governmentwide entities, State, Local, etc.). As such, the SAWG will assess linkage capabilities, functions, and processes to define leverage points to support the 24 Presidential Priority E-Gov initiatives.*

10.0 DECISION MAKING AND TEAMWORK

The SAWG is the decision-making body for recommendations of technologies, tools, and industry-standards to support the implementation of the 24 Presidential Priority E-Gov initiatives. Recommendation-making processes will be extremely complex by the distributed nature and time constraints of the E-Gov initiatives. As such, the SAWG will collaborate with agencies (both locally and remotely), to provide quick and effective recommendations based on existing knowledge, best practices, and lessons learned. Furthermore, it is expected that as the SAWG matures, external entities such as the Federal CIO Council will play a vital role in helping to the establish governmentwide standards and compliance based on SAWG recommendations as a result of lessons learned through working with the 24 Presidential Priority E-Gov initiatives.

The SAWG working group will be governed and led by the Chief Technology Officer (CTO). The CTO will select the technologies, tools, and standards that form the cornerstone of SAWG recommendations across the 24 Presidential Priority E-Gov initiatives. The Chief Architect will support the CTO by providing a summary of capabilities, issues, risks, and concerns that were gathered by the Senior and supporting Solution Architects. The Senior Architect will provide the necessary guidance and leadership to support the duties of the Solution Architects. The Senior Architect will elevate issues to the Chief Architect when trends, research, and lessons warrants the selection / removal of CTO technology recommendations. Figure 3 visually illustrates these processes.

FIGURE 3 – DECISION MAKING AND TEAMWORK PROCESSESES



11.0 INTERNAL COMMUNICATIONS

Internal communication will involve the Solutions Architects meeting weekly to discuss plans, actions, and achievements. The level of communication among Solutions Architects and the Chief Architect will be substantial, requiring the Solutions Architect to work in small and medium sized groups and participate in forums and conferences with other members of the SAWG. The extended SAWG team (i.e., OMB Portfolio Managers, Governmentwide entities, Managing Partners, Industry Working Groups), will meet once a month to discuss actions, achievements, successes, and needs.

[External to the Project Team, the Solutions Architects will either meet or make contact with the Solutions Architects that work in the public sector]. In an effort to stay abreast of the current changes in related technlogy, the Solutions Architect will also contact or meet with vendors and/or industry working groups that provide products and services that use SAWG recommended technologies on an on-going basis.

Collaboration Tools will provide the SAWG with the ability to communicate frequently with the E-Gov agency Solution Architects to keep them abreast of changing recommendations, lessons learned, and best practices.

12.0 KNOWLEDGE MANAGEMENT

12.1 Document Preparation

Solutions Architects will need to capture and share information on best practices, lessons learned, standards, open technologies, vendor products and solutions, as well as technical system architecture requirements. This information will be captured in a database, spreadsheet or any other widely accepted format (i.e., Microsoft Word, Adobe Acrobat, HTML) for information storage and retrieval. Information on paper, such as periodicals, articles and technical white papers will be stored as physical files and can be shared as appropriate. Whenever possible, information will be stored electronically in a common repository for shared use. On-line articles, vendor products and solutions can be stored as .HTML files. Living documents, such as standards, recommendations, lessons learned, and best practices can be stored in either a word processing application such as Microsoft Word, Microsoft PowerPoint, Adobe Acrobat, or Microsoft Excel.

12.2 Supporting Platform

Under configuration management processes, The SAWG will leverage a knowledge / collaborative platform to support distribution of materials (i.e., documents, best practices, lessons learned) to the agencies involved in the design, development, and implementation of the 24 Presidential Priority E-Gov initiatives and supporting architectures. In addition, as the organizational structure of the SAWG will involve a

mix of matrixed and permanent Solution Architects, a centralized repository will provide a basis for the training of new personnel. Specifically, the knowledge / collaborative platform should include at a minimum:

- Central and Private Workspaces
- Shared Calendar
- Links
- Document Library / Repository
- Forums and Discussions
- Tasking
- Security and Administration

13.0 APPENDIX A – POSITION DESCRIPTIONS

13.1 Chief Architect

Statement of Duties

The Chief Architect will provide oversight to multiple software development projects and will be the primary decision maker in selecting the appropriate technical architecture to be used by the projects. The Chief Architect will work with all related parties (management, end users, requirements analysts, Solutions Architects) in order to determine the objectives of each system, as well as the constraints (chronological, technical, financial). Based on the objectives and constraints specific to each project, the Chief Architect will determine the most suitable technical architecture and define the solution at a high level so that it may be used by the Solutions Architect(s) in developing the detailed technical architecture.

After providing the selection and/or approval of the technical architecture, the Chief Architect will provide technical oversight of the project to ensure that the technical architecture is designed, developed, tested, and deployed properly and according to plan. The Chief Architect will work closely with the Solutions Architect(s) assigned to each project in order to ensure that all technical architecture requirements are adequately addressed.

The Chief Architect will engage with the selected integrator (in-house or external teams) to deliver component-based technical architectural solutions to the end-user customers.

In addition to selecting the technical architecture for each project, the Chief Architect will provide project technical oversight, work with Solution Architects to update the minimum technical standards to take into account constantly changing technologies, and network with vendor representatives and public and private sector Chief Architects in order to share information. Lastly, a significant requirement exists to advise top Information Management (IM) officials on the benefits of a component based technical architecture, and to maximize the benefit of an organization-wide technical architecture standardization policy.

The Chief Architect will participate in a variety of forums with the Solutions Architects in order to share best practices, lessons learned, constantly update the technical system architecture requirements based on changing technologies, and share knowledge related to recent and current and up-coming vendor products and solutions.

The Chief Architect will keep abreast of all current and upcoming technologies related to component based technical architectures, specifically those surrounding Open Technologies and Open Standards, J2EE, .NET, and web services. The Chief Architect will maintain a high-level of understanding through reading periodicals, magazines, and on-line media. The Chief Architect will attend and participate in a variety of

conferences surrounding these technologies, and will be expected to network heavily with other Chief Architects working for the public sector as well as the private sector. The Chief Architect will develop relationships with vendors providing products and/or services in the related technologies in order to gain a forward-looking vision of the direction of the technologies.

The Chief Architect works under the administrative supervision of one of the organization's senior technology managers. The Chief Architect independently develops and modifies the objectives and boundaries of assignments according to the needs of the project. The Chief Architect independently plans, designs, and carries out studies and leads projects in coordination with other IM experts, both within and outside the organization. Completed work is considered technically and administratively authoritative, is normally accepted without significant change, and is evaluated primarily for accomplishment of mission. This position requires significant travel and interface with all levels of IM on an individual basis. As a rule, the Chief Architect is required to make decisions concerning work projects without referring the matter to his/her supervisor. Many times, the decisions will have to be made under pressure where time is of the essence in order not to delay missions of national importance.

Professional / Technical Qualifications Needed

1. The Chief Architect will need an exceptionally broad knowledge of technical architecture designs, infrastructures, advanced corporate information systems concepts, state-of-the-art information technology frameworks, interfaces, protocols, practices, and principles related to the myriad of IM systems including client/server and web-based applications, mainframe and distributed database systems, local area networks, and wide area networks. Additionally, the Chief Architect should have a thorough understanding of advancements in telecommunications and computer equipment, software, information architecture concepts and characteristics, open standards such as SOAP, WDSL, XML, and FTP.

2. The Chief Architect must be proficient and have experience with a variety of software technical architectures, and have a good understanding of Java 2 Enterprise Edition (J2EE) and/or Microsoft .NET. The Chief Architect must also have knowledge of web services, as well as the various protocols used throughout a web-based component-based architecture system (ex. WDSL, SOAP, XML, HTTP, etc.). The Chief Architect should have a solid understanding in object oriented design and development. It is desirable that the Chief Architect have experience with data warehouses and associated technologies (OLTP, OLAP) and have experience with managing extremely large data systems. Additionally, the Chief Architect must understand Open Technologies and Open Standards, how they can best be leveraged to solve specific technical problems, and be able to articulate to a business-oriented

non-technical audience the advantages and disadvantages of using Open Technologies and Open Standards.

3. The Chief Architect must have great Systems Architecture / Engineering and Customer skills, and a driving success attitude. This will include exceptional listening, creativity, and deductive reasoning skills as well as the ability to logically process information. The ability to think clearly under pressure and to present and articulate where you are going with an idea is essential. Confidence and credibility in front of senior management and end-users is important to succeed in this role.

4. The Chief Architect will define issues and problems, plan and conduct feasibility studies, and advise top IM executives concerning long-range corporate information architecture and standards developments. Knowledge of the IM standards processes, the information systems lifecycles process, and the capability to manage large projects, including planning for IM requirements, analyzing alternatives, recommending solutions, and reviewing and establishing new or revising current policies is desirable. The Chief Architect must possess a very broad technical and managerial background to successfully handle the IM complexities involved, the very difficult schedules imposed, and analyze problems and negotiate with management, the Solution Architects, and other technical experts to implement recommended solutions for technical architecture and IM standards initiatives.

Other Information

1. Guidelines. Guidelines consist of the National Institutes of Standards and Technology, General Services Administration, Office of Management and Budget, Information Technology Industries Council, and American National Standards Institute regulations and standards, Federal Information Processing Standards, National Communications System Government-wide telecommunications standards (FED-STDS), Telecommunications Control Protocol / Internet Protocol Standards, Federal Acquisition Regulations, Federal Information Resources Management Regulations, DOE Technical Standards Program, Departmental IM policies, and, broadly stated technical objectives regarding the component based Technical Architecture Program. The Chief Architect interprets this guidance in relation to the organization's information architecture and standards program needs, isolates areas appropriate to further study, and devises and plans projects to define specific objectives. Established records and local personnel are frequently inadequate sources of information upon which to base the required studies. Judgment is required in developing ways of obtaining data on and evaluating the significance of issues relating to the formulation, definition, structure and currency of the information architecture including not only technology but its relationship to providing information to support critical planning. Most external-agency policy is general in nature with little specificity regarding the approach to be followed. Establishment of new or revised policies, standards, and guidelines on IM and or

appropriate modifications to the organization information architecture based upon such general guidelines is required.

2. Complexity. The work primarily involves a depth of analysis in the technical architecture and IM standards specialty areas encompassing hardware, software, interfaces, protocols, IM practices, technology advances, user needs, and networking topologies. The work concerns a field of rapidly evolving technology, often requiring departures from established practices and integrating the efforts of other IM experts within and outside of the organization. The implementation of new IM capabilities, technical architectures, and standards are critical and must be thoroughly researched as any minor problem could have a major impact on the delivery of critical projects. Projection of technical developments and project accomplishments require coordination with key applications and specialty area IM experts nationwide. Many technical architecture problems have more than one viable solution, and many organizations have biases regarding the proper method to proceed. As a result, proposed designs often result in solutions that are opposed by other organizations requiring sensitive, sensible and extensive arbitration and negotiations with upper management of these organizations.

3. Scope and Effect. The work involves the analysis of a business requirements, and determining the most suitable technical architecture based on objectives and constraints. This individual will serve as the technical oversight manager for multiple technical projects, ensuring that the selected technical architecture is properly designed, developed, tested, and deployed. The Chief Architect will work closely with the Solutions Architect(s) assigned to each project to ensure that each project maximizes the benefits of lessons learned from similar projects, best practices, as well as to verify that the system adheres to the minimal technical architecture standards.

13.2 Solution Architect

Statement of Duties

The Solutions Architect will direct the specific technical architectural design in support of the overall technical architectural direction specified by the Chief Architect. The Solutions Architect will work closely with the software development team in order to create the initial technical architecture, as well as to update the system technical architecture in response to system enhancements and modifications. The Solutions Architect will focus on maximizing the use of common architectures, components, and strategies across efforts. The use of common architectures (ex. J2EE with XML over SOAP) will lead to significant value capture, and reduce the total cost of ownership for the government, and as such is a significant responsibility for the Solutions Architect. Additionally, the Solutions Architect will need to work with the Chief Architect and other Solutions Architects to set standards and ensure the consistent application of: architectures, business logic, and documentation for external parties, security, interoperability, reusability, scalability, extensibility, and dependability.

The Solutions Architect will engage with the selected integrator (in-house or external teams) to deliver component-based technical architectural solutions to end-user customers. The Solutions Architect may individually lead the technical architecture design for a particular effort, or may be teamed with additional Solutions Architects, depending on the needs of the effort. Solutions Architects will advise and guide the project managers for each specific effort, ensuring that the Chief Architect's decision and common vision is communicated and properly executed for each effort.

The Solutions Architect will participate in a variety of forums with other Solutions Architects and the Chief Architect in order to share best practices, lessons learned, continually update the technical system architecture requirements based on changing technologies, and share knowledge related to recent and current and up-coming vendor products and solutions. The level of communication with other Solutions Architects and the Chief Architect will be substantial, requiring the Solutions Architect to work equally well independently as well as in small and medium sized groups. Since there are typically a variety of different technical architecture solutions for a particular problem, the Solutions Architect should be able to handle stressful situations and discussions while still clearly communicating ideas and concepts.

The Solutions Architect will keep abreast of all current and upcoming technologies related to component based technical architectures, specifically those surrounding Open Technologies and Open Standards, J2EE, .NET, and web services. The Solutions Architect will maintain a high-level of understanding through reading periodicals, magazines, and on-line media. The Solutions Architect will attend and participate in a variety of conferences surrounding these technologies, and will be expected to network

heavily with other Solutions Architects working for the public sector as well as the private sector. The Solutions Architect will develop relationships with vendors providing products and/or services in the related technologies in order to gain a forward-looking vision of the direction of the technologies.

In addition to designing the specific technical architecture, the Solutions Architect will provide oversight to the software development staff in order to share lessons learned, best practices, and provide overall recommended guidance. Although the Technical Project Manager will directly oversee the software development staff, the Solutions Architect will be required to stay closely involved with the software development staff to ensure that the technical system architecture design is being developed to properly. Additionally, the Solutions Architect will work closely with the Chief Architect in order to ensure that the design adheres to all organizational technical architecture standards, and incorporates best practices and lessons learned from other projects. Lastly, a significant requirement exists to advise top Information Management (IM) officials on the benefits of a component based technical architecture, and to maximize the benefit of an organization-wide technical architecture standardization policy.

The Solutions Architect will work under the administrative supervision of the Chief Architect. The Solutions Architect independently develops and modifies the objectives and boundaries of assignments according to the needs of the project, at all times following the high-level technical architecture design selected by the Chief Architect. Completed work is considered technically and administratively authoritative, is normally accepted without significant change, and is evaluated primarily for accomplishment of mission. This position requires minimal travel and interface with all levels of IM on an individual basis. As a rule, the Solutions Architect is required to make decisions concerning work projects without referring the matter to his/her supervisor. Many times, the decisions will have to be made under pressure where time is of the essence in order not to delay missions of national importance.

Professional / Technical Qualifications Needed

1. The Solutions Architect must have a broad knowledge of information architecture designs, infrastructures, advanced information systems concepts, state-of-the-art information technology frameworks, interfaces, protocols, best practices, and principles related to the myriad of IM systems including client/server and web-based applications. The Solutions Architect must also have an understanding of advancements in information architecture concepts and characteristics, and open standards such as SOAP, WDSL, XML, and FTP.

2. The Solutions Architect must have excellent Systems Architecture / Engineering skills and a proven track record of successful technical architecture designs. Ideally, the Solutions Architect would have a significant background in software development, specifically in J2EE or in a .NET supported language.

3. The Solutions Architect must have experience with a variety of software technical architectures, particularly Java 2 Enterprise Edition (J2EE) and / or Microsoft .NET solutions. The Solutions Architect must also have experience with web services, as well as the various protocols used throughout an Internet-based component based architecture system (ex. WDSL, SOAP, XML, HTTP, etc.). The Solutions Architect should have a solid understanding (actual development experience desirable) of object oriented design and development. It is desirable that the Solutions Architect have experience with data warehouses and associated technologies (OLTP, OLAP) and have experience with managing extremely large data systems. Additionally, the Solutions Architect must understand Open Technologies and Open Standards, and how they can best be leveraged to solve specific technical problems.

4. The Solutions Architect should have practical experience in managing and / or implementing solutions that include as an area of focus one or more of the following critical areas: network security, system security, environment security, distributed processing, data warehouses, dependability and / or redundancy, scalability, adaptability, privacy of user information (government experience desirable), common architectures, web services, and object oriented systems.

5. Since the Solutions Architect will act as a technical architecture advisor in the design and support and development of the technical system in accordance with the technical architecture selected by the Chief Architect, it is essential that the Solutions Architect be able to perform at a high level (i.e. articulating the technical architecture to both management and technical staff) and a low level (i.e. communicating specific technical architecture concepts to the technical development staff). As such, the Solutions Architect must have exceptional communication skills (written, oral, presentation), listening skills, and the ability to think clearly under stress.

6. The Solutions Architect should possess a very broad technical and managerial background to successfully handle the IM complexities involved, the very difficult schedules imposed, and analyze problems and negotiate with management, the Chief Architect, other Solutions Architects, and other technical experts in order to implement recommended solutions for information architecture and IM standards initiatives.

Other Information

1. Guidelines. Guidelines consist of the National Institutes of Standards and Technology, General Services Administration, Office of Management and Budget, Information Technology Industries Council, and American National Standards Institute regulations and standards, Federal Information Processing Standards, National Communications System Government-wide telecommunications standards (FED-STDS), Telecommunications Control Protocol / Internet Protocol Standards,

Federal Acquisition Regulations, Federal Information Resources Management Regulations, DOE Technical Standards Program, Departmental IM policies, and broadly stated technical objectives regarding the component based Technical Architecture Program. The Solutions Architect interprets this guidance in relation to the organization's technical architecture and standards program needs, isolates areas appropriate to further study, and devises and plans projects to define specific objectives. Established records and local personnel are frequently inadequate sources of information upon which to base the required studies. Judgment is required in developing ways of obtaining data on and evaluating the significance of issues relating to the formulation, definition, structure and currency of the technical architecture including not only technology but its relationship to providing information to support critical tasks. Most external agency policy is general in nature with little specificity regarding the approach to be followed. Establishment of new or revised policies, standards, and guidelines on information management and or appropriate modifications to the organization technical architecture based upon such general guidelines is required.

2. Complexity. The work primarily involves a depth of analysis in the technical architecture and IM standards specialty areas encompassing hardware, software, interfaces, protocols, IM practices, technology advances, user needs, and networking topologies. The work concerns a field of rapidly evolving technology, often requiring departures from established practices and integrating the efforts of other IM experts within and outside of the organization. The implementation of new IM capabilities, technical architectures, and standards are critical and must be thoroughly researched as any minor problem could have a major impact on the delivery of the project. Projection of technical developments and project accomplishments require coordination with key applications and specialty area IM experts nationwide. Many technical architecture problems have more than one viable solution, and many organizations have biases regarding the proper method to proceed. As a result, proposed designs often result in solutions that are opposed by other organizations requiring sensitive, sensible and extensive arbitration and negotiations with upper management of these organizations.

3. Scope and Effect. The work primarily involves the design of a specific system technical architecture based upon the selected high-level architecture by the Chief Architect. Secondarily, the Solutions Architect must support the development, testing, and deployment of the system in order to ensure that the technical architecture is rigorously followed and fully utilized. The specific work organizational structure will be defined based on the capabilities of other Solution Architects, but is likely to be one of the following: (1) this individual will serve as the technical architecture manager for a single technical project, or (2) the individual will work with a team of other Solutions Architects with the team based either on the selected technology, architecture, technical layer (i.e. business logic, presentation,

etc.), type of project (ex. homeland defense) or size of project (ex. a centralized service or a decentralized service). The specific work organizational structure may change over time as the capabilities and structure of the other Solutions Architects changes, but the overall goal of the Solutions Architects role will be to ensure that the selected technical architecture is properly designed, developed, tested, and deployed. The Solutions Architect will work closely with the Chief Architect assigned to each project to ensure that each project maximizes the benefits of lessons learned from similar projects, best practices, as well as to verify that the system adheres to the minimal technical architecture standards.

14.0 APPENDIX B – 24 PRESIDENTIAL PRIORITY INITIATIVES

14.1 Government to Citizen

1. Recreation One-Stop
    - Would build upon "Recreation.gov" and provide a one-stop, searchable database of recreation areas Nation wide, featuring online mapping and integrated transactions, including online campground reservations and the purchase of recreational passes, maps and other products. The project would include links to recreational opportunities provided by all levels of government.
    - *Proposed Agency Managing Partner: DOI*

2. Eligibility Assistance Online
    - Through a common Internet portal, citizens (with a focus on high-need demographic groups) would have an online tool for identifying government benefit programs from which they may be eligible to receive assistance.
    - *Proposed Agency Managing Partner: Labor*

3. Online Access for Loans
    - Would allow citizens and businesses to find the loan programs that meet their needs.
    - *Proposed Agency Managing Partner: Education*

4. USA Services
    - Would use best practices in Customer Relationship Management to enable citizens to quickly obtain service online, while improving responsiveness and consistency across government agencies. This initiative would enable citizens to personalize the combination of services they obtain across multiple programs and agencies in a privacy-protected environment.
    - *Proposed Agency Managing Partner: GSA*

5. EZ Tax Filing
    - Would make it easier for citizens to files taxes in a Web-enabled environment.
    - *Proposed Agency Managing Partner: Treasury/IRS*

14.2 Government to Business

6. Online Rulemaking Management
    - Would provide access to the rulemaking process for citizens anytime, anywhere. An existing "e-Docket" system will be expanded and enhanced to serve as a government-wide system for agency dockets. Other agency systems would use the system by creating "storefronts" consistent with statutory requirements for each agency under the Administrative Procedures Act. Comments would be organized using knowledge management tools to improve the quality of rules.
    - *Proposed Agency Managing Partner: DOT*

7. Expanding Electronic Tax Products for Businesses
    - This initiative's goals include decreasing the number of tax-related forms that an employer must file, providing timely and accurate tax information to employers, increasing the availability of electronic tax filing and modeling simplified federal and state tax employment laws.
    - *Proposed Agency Managing Partner: Treasury /IRS*

8. Federal Asset Sales
    - Prospective customers would be able to find assets that they are interested in, regardless of the agency that holds those assets. Customers would be able to bid and / or make purchases electronically for financial, real and disposable assets.
    - *Proposed Agency Managing Partner: GSA*

9. International Trade Process Streamlining
    - Would create a single customer-focused site where new or existing exporters could be assisted electronically through the entire export process. The 20 current Web sites would be organized and accessed through a single entry point.
    - *Proposed Agency Managing Partner: DOC*

10. One-Stop Business Compliance Information
    - Would provide information on laws and regulations that can help users understand compliance information. It would also offer wizards and tutorials to help users determine if rules apply to them and how to proceed. To the maximum extent possible, permits would be completed, submitted and approved online.
    - *Proposed Agency Managing Partner: SBA*

11. Consolidated Health Informatics
    - Would provide the basis for a simplified and unified system for sharing and reusing medical record information among government agencies and their private healthcare providers and insurers. It would enable a single mechanism for making those records accessible.
    - *Proposed Agency Managing Partner: HHS*

14.3 Government to Government

12. Geospatial Information One-Stop
    - Would provide access to the Federal government's spatial data assets in a single location and help make state and local spatial data assets more accessible. Federal agencies would also make their planned and future spatial data activities available to state and local governments to promote collaboration and reduce duplicative efforts. Data standards developed through an intergovernmental process would result in data that can be used multiple times for multiple purposes, saving taxpayer money. It would also help empower the private sector by communicating the characteristics of a desired standardized data product.
    - *Proposed Agency Managing Partner: DOI*

13. E-Grants
    - Would create an electronic grants portal for grant recipients and the grant-making agencies that would streamline, simplify and provide an electronic option for grants management across the government. This effort will include the work of the 26 Federal grant-making agencies to implement the Federal Financial Assistance Management Improvement Act of 1999 (P.L.106-107).
    - *Proposed Agency Managing Partner: HHS*

14. Disaster Assistance and Crisis Response
    - Involves a public, one-stop portal containing information from applicable public and private organizations involved in disaster preparedness, response, recovery and mitigation. This portal would also serve as a single point of application for all disaster assistance programs.
    - *Proposed Agency Managing Partner: FEMA*

15. Wireless Public Safety Interoperable Communications / Project (SAFECOM)
    - For public safety officials to be effective in their daily responsibilities, as well as before, during and after an emergency event, public safety agencies throughout all levels of government, i.e., Federal, state and local, must be able to communicate with each other. This initiative would address the Nation's critical shortcomings in efforts by public safety agencies to achieve interoperability and eliminate redundant wireless communications

infrastructures. At the same time, it would assist state and local interoperability and interoperability between Federal public safety networks.
- *Proposed Agency Managing Partner: Treasury*

16. E-Vital
    - Would expand the existing vital records online data exchange efforts between Federal agencies and state governments.
    - *Proposed Agency Managing Partner: SSA*

14.4 Internal Efficiency and Effectiveness

17. E-Training
    - The vision is to provide a repository of government-owned courseware to be made available to all governments (Federal, state and local), to provide high interest and government-required training to government employees at economies of scale pricing. In addition, this would foster development of communities of practice. This initiative supports achievement of the President's Human Capital initiative.
    - *Proposed Agency Managing Partner: OPM*

18. Recruitment One-Stop
    - Would improve the Federal hiring process by improving the functionality of the Federal automated employment information system. It would provide job seekers with streamlined resume submission, online feedback about their status in the employment process and integration with automated assessment tools. The initiative would provide Federal employers with a searchable resume database.
    - *Proposed Agency Managing Partner: OPM*

14.5 Enterprise Human Resources (HR) Integrations

19. Integrated Human Resources and E-Clearance
    - Would eliminate the need for paper employee records, enable strategic decisions regarding the use of human capital and financial resources to improve agency performance and address emerging needs. It would also allow for the electronic transfer of HR data throughout the Federal sector, better protect the rights and benefits of the Federal workforce and streamline and improve government-wide reporting and data analyses. It would reduce the time required to seek and access employee and contractor security clearance information.
    - *Proposed Agency Managing Partner: OPM*

20. E-Payroll / HR (Payroll Processing Consolidation)

- The vision is to simplify and unify elements of the Payroll / HR process in order to consolidate and integrate HR and payroll systems across government. This effort would provide several hundred million dollars of savings to organizations and significantly reduce future IT investments and could foster direct privatization. This initiative supports achievement of the five dimensions of the President's Management Agenda.
- *Proposed Agency Managing Partner: OPM*

21. E-Travel
    - Agencies would use a common travel management system throughout the Federal government. Existing travel management resources will be consolidated and processes will be simplified for cheaper, more efficient operation.
    - *Proposed Agency Managing Partner: GSA*

22. Integrated Acquisition Environment
    - Agencies would begin sharing common data elements to enable other agencies to make more informed procurement, logistical, payment and performance assessment decisions. It will also allow agencies to make maximum use of E-market approaches.
    - *Proposed Agency Managing Partner: GSA*

23. Electronic Records Management
    - Would provide the tools that agencies will need to manage their records in electronic form, addressing specific areas of electronic records management where agencies are having major difficulties. This project would provide guidance on electronic records management applicable government-wide and will provide tools for agencies to transfer electronic records to NARA in a variety of data types and formats so that they may be preserved in for future use by the government and citizens.
    - *Proposed Agency Managing Partner: NARA*

14.6 Initiatives That Address Barriers to E-Government Success

24. E-Authentication
    - Would build and enable the mutual trust needed to support widespread use of electronic interactions between the public and government and across governments. This would establish a method for satisfactorily establishing 'identity,' without which the promise of E-Government will never reach its full potential. The project will establish common interoperable authentication solutions for all of the E-Government initiatives.
    - *Proposed Agency Managing Partner: GSA (Infrastructure)*

15.0 APPENDIX C – REFERENCE AND SUPPORTING DOCUMENTS

Federal Enterprise Architecture Program Management Office

- Component-Based Architectures – Solution Roadmap
- Component-Based Architectures – White Paper
- Business Reference Model (BRM)